PROPERTY PLANNING COMMON ELEMENTS

COMPONENTS OF MASTER PLANS

HABITATS AND THEIR MANAGEMENT

Red Pine

Description

This forest type is comprised of >50% basal area in red pine, and commonly occurs in areas of irregular glacial topography, mixed glacial features, or sandy outwash and till on dry, nutrient-poor soils (loamy sands or sands). Historically, red pine often occurred in forests co-dominant with white pine (the "pineries"). These forests were widely distributed across northern Wisconsin but were most abundant in areas where lakes, rivers, streams, wetlands, or other natural barriers prevented wildfires from advancing unimpeded across large areas at frequent intervals. Periodic, lower-intensity fire that maintained pine dominance and reduced the abundance of competing hardwoods in the understory was the primary disturbance regime, with severe, stand-replacing fires occurring at intervals of many decades to several centuries. Canopy associates could include red oak, red maple, big-tooth aspen, trembling aspen, and white birch, with black cherry, white oak, northern pin oak, balsam fir, and jack pine occurring less commonly or rarely.

Red pine also occurred in drier forests dominated by jack pine and northern pin oak. Wildfire frequency (and often intensity) typically was higher in these forests and burn intervals of one to several decades often resulted in jack pine dominance, but where fire intervals of 50 to 100 years or more occurred, red pine could become the dominant tree.

These forests were heavily targeted during the severe, widespread logging that followed Euro-American settlement of Wisconsin in the mid-to-late 1800s, and were virtually gone by the end of the 19th century. The slash fires that followed this logging often burned stands of young, uncut pines, leaving limited or no pine seed source to recolonize the cut-over areas.

Today, red pine-white pine forests are greatly reduced in extent. The former "pineries" are now composed largely of the early-successional species that proliferated after the Cutover, particularly trembling aspen and white birch. Old-growth examples of red pine-white pine-dominated forest are exceedingly rare. Where second-growth stands occur, they are sometimes dominated by red oak. Other canopy associates are red maple and occasionally sugar maple, with paper birch, trembling aspen, and big-tooth aspen sometimes present. Common understory shrubs include hazelnuts and blueberries along with low-growing species like wintergreen and partridge-berry. Common herbs include wild sarsaparilla, Canada mayflower, and cow-wheat.

Natural-origin red pine stands are now uncommon due to altered fire regimes. Most red pine stands in Wisconsin are of plantation origin and are less than 60 years old; very few stands are greater than 100 years in age.

Plantations are described in the Conifer Plantation Common Element.

Ecological Landscape Opportunities

Ecological Landscape	Opportunity*
Northeast Sands	M
Northern Highland	M
Northwest Sands	M
Central Lake Michigan Coastal	I
Central Sand Plains	I
Forest Transition	I
North Central Forest	I
Northern Lake Michigan Coastal	I
Northwest Lowlands	I
Superior Coastal Plain	I
Central Sand Hills	P
Southeast Glacial Plains	P
Western Coulee and Ridges	P

*M = Major: major opportunity exists in this Landscape; many significant occurrences are recorded or restorations likely to be successful.

I = Important: several occurrences important to maintaining the community in the state occur in this Landscape.

P = Present: community is present in the Landscape, but better opportunities exist elsewhere.

Rare Species

Many Species of Greatest Conservation Need (SGCN) are associated with red pine-white pine forest based on the findings in Wisconsin's 2015 Wildlife Action Plan. To learn more, visit the Northern Forest communities page and click on "Northern Dry-mesic Forest".

Threats

- Historically, red pine-white pine forests were maintained by ground fires of low to moderate intensity and frequency that kept understories relatively open and free of competing deciduous saplings and shrubs and facilitated pine regeneration. The absence of fire and resulting alterations in stand structure and composition (increase in deciduous undergrowth and species such as red maple that cast deep shade) have created conditions increasingly unfavorable for pine regeneration, particularly for the more light-demanding red pine.
- Many red pine stands suffer from forest simplification (reduced species and structural diversity) as a result of past and current management practices, including fire suppression, harvest of most older and old-growth stands, and homogenous plantation management (single-species maintenance, relatively young stands lacking structural complexity, even-aged rotations).
- Non-native invasive species, including buckthorns, Asian honeysuckles, garlic mustard, and common speedwell, are a threat to red pine, particularly in the central part of the state, and are increasingly moving northward.
- Fragmentation due to agriculture, residential development, and roads is a threat to red pine in certain parts of the state.

- Major pests/diseases that threaten red pine are heterobasidiom root disease (formerly known as annosum root rot), Diplodia shoot blight, and red pine pocket mortality.

Management Techniques

- Overstory removal
- Seed Tree
- Shelterwood
- Direct seeding and planting
- Site preparation
- Intermediate treatments
- Pesticide treatments
- Prescribed fire

Management Considerations

- Consider landscape context and pattern when managing for red pine. Where possible, manage for larger blocks; attempt to match stand boundaries to physiographic or edaphic features; increase connectivity between forest patches; and soften sharp transitions between forest types.
- Utilize thinning, especially in well-stocked stands, to enhance tree growth, health, composition, structure, and quality.
- Consider natural regeneration methods. While these have rarely been applied in red pine stands, shelterwood and seed tree methods in combination with site preparation techniques to create a favorable seed bed show the most promise.
- Increase species diversity in red pine stands by creating openings, retaining other species during thinning or at rotation (especially white pine) to serve as seed sources, or including other species in plantings.
- Use variable density thinning to increase structural complexity within stands, considering openings and patches of different ages and composition.
- Develop and maintain supercanopy trees, large trees, large cavity trees, large snags, and coarse woody debris to increase structural complexity within stands.
- Leave scattered large red pine in many harvest areas if they are healthy and do not pose a risk to human or forest health.
- Reintroduce fire. Prescribed fire can be an effective way to eliminate shrub and hardwood competition, reduce thick duff layers, and prepare mineral seedbeds in red pine stands >50 years old.
- Apply extended rotation and managed old-growth techniques to some stands.
- Protect old-growth and relict stands.